21865-002001/6502

SEQUENCE LISTING

<110> Yu, Mang
     Fang, Fang

<120> Broad Spectrum Anti-Viral Therapeutics
  And Prophylaxis

<130> 21865-002001/6502

<140> US 10/718,986
<141> 2003-11-21

<150> US 60/428,535
<151> 2002-11-12

<150> US 60/464,217
<151> 2003-04-19

<160> 12

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 58
<212> PRT
<213> Bos taurus

<400> 1
Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala
1   5   10   15
Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
        20   25   30
Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala
      35   40   45
Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
   50   55

<210> 2
<211> 24
<212> PRT
<213> Homo sapiens

<400> 2
Asn Gly Arg Arg Ile Cys Leu Asp Leu Gln Ala Pro Leu Tyr Lys Lys
1   5   10   15
Ile Ile Lys Lys Leu Leu Glu Ser
        20

<210> 3
<211> 27
<212> PRT
<213> Homo sapiens

<400> 3
Gly Arg Glu Leu Cys Leu Asp Pro Lys Glu Asn Trp Val Gln Arg Val
1   5   10   15
Val Glu Lys Phe Leu Lys Arg Ala Glu Asn Ser
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<210> 4
<211> 34
<212> PRT
<213> Homo sapiens

<400> 4
Gln Ile His Phe Phe Phe Ala Lys Leu Asn Cys Arg Leu Tyr Arg Lys
 1               5                  10                  15
Ala Asn Lys Ser Ser Lys Leu Val Ser Ala Asn Arg Leu Phe Gly Asp
            20                  25                  30
Lys Ser


<210> 5
<211> 34
<212> PRT
<213> Homo sapiens

<400> 5
Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg Lys Leu Arg Lys Arg
 1               5                  10                  15
Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg Leu Ala Val Tyr Gln
            20                  25                  30
Ala Gly


<210> 6
<211> 12
<212> PRT
<213> Homo sapiens

<400> 6
Arg Arg Leu Arg Arg Met Glu Ser Glu Ser Glu Ser
 1               5                  10


<210> 7
<211> 21
<212> PRT
<213> Homo sapiens

<400> 7
Lys Arg Lys Lys Lys Gly Gly Lys Asn Gly Lys Asn Arg Arg Asn Arg
 1               5                  10                  15
Lys Lys Lys Asn Pro
            20


<210> 8
<211> 379
<212> PRT
<213> Homo sapiens

<400> 8
Met Ala Ser Leu Pro Val Leu Gln Lys Glu Ser Val Phe Gln Ser Gly
 1               5                  10                  15
Ala His Ala Tyr Arg Ile Pro Ala Leu Leu Tyr Leu Pro Gly Gln Gln
            20                  25                  30
```

2

Ser Leu Leu Ala Phe Ala Glu Gln Arg Ala Ser Lys Lys Asp Glu His
        35   40   45
Ala Glu Leu Ile Val Leu Arg Arg Gly Asp Tyr Asp Ala Pro Thr His
        50   55   60
Gln Val Gln Trp Gln Ala Gln Glu Val Val Ala Gln Ala Arg Leu Asp
65   70   75   80
Gly His Arg Ser Met Asn Pro Cys Pro Leu Tyr Asp Ala Gln Thr Gly
                85   90   95
Thr Leu Phe Leu Phe Phe Ile Ala Ile Pro Gly Gln Val Thr Glu Gln
                100   105   110
Gln Gln Leu Gln Thr Arg Ala Asn Val Thr Arg Leu Cys Gln Val Thr
        115   120   125
Ser Thr Asp His Gly Arg Thr Trp Ser Ser Pro Arg Asp Leu Thr Asp
        130   135   140
Ala Ala Ile Gly Pro Ala Tyr Arg Glu Trp Ser Thr Phe Ala Val Gly
145   150   155   160
Pro Gly His Cys Leu Gln Leu Asn Asp Arg Ala Arg Ser Leu Val Val
                165   170   175
Pro Ala Tyr Ala Tyr Arg Lys Leu His Pro Ile Gln Arg Pro Ile Pro
                180   185   190
Ser Ala Phe Cys Phe Leu Ser His Asp His Gly Arg Thr Trp Ala Arg
                195   200   205
Gly His Phe Val Ala Gln Asp Thr Leu Glu Cys Gln Val Ala Glu Val
        210   215   220
Glu Thr Gly Glu Gln Arg Val Val Thr Leu Asn Ala Arg Ser His Leu
225   230   235   240
Arg Ala Arg Val Gln Ala Gln Ser Thr Asn Asp Gly Leu Asp Phe Gln
                245   250   255
Glu Ser Gln Leu Val Lys Lys Leu Val Glu Pro Pro Pro Gln Gly Cys
                260   265   270
Gln Gly Ser Val Ile Ser Phe Pro Ser Pro Arg Ser Gly Pro Gly Ser
        275   280   285
Pro Gln Trp Leu Leu Tyr Thr His Pro Thr His Ser Trp Gln Arg Ala
        290   295   300
Asp Leu Gly Ala Tyr Leu Asn Pro Arg Pro Pro Ala Pro Glu Ala Trp
305   310   315   320
Ser Glu Pro Val Leu Leu Ala Lys Gly Ser Cys Ala Tyr Ser Asp Leu
                325   330   335
Gln Ser Met Gly Thr Gly Pro Asp Gly Ser Pro Leu Phe Gly Cys Leu
                340   345   350
Tyr Glu Ala Asn Asp Tyr Glu Glu Ile Val Phe Leu Met Phe Thr Leu
                355   360   365
Lys Gln Ala Phe Pro Ala Glu Tyr Leu Pro Gln
        370   375

<210> 9
<211> 424
<212> PRT
<213> Homo sapiens

<400> 9
Leu Ala Gly Gly Ser Val Arg Trp Gly Ala Leu His Val Leu Gly Thr
  1   5   10   15
Ala Ala Leu Ala Glu His Arg Ser Met Asn Pro Cys Pro Val His Asp
        20   25   30
Ala Gly Thr Gly Thr Val Phe Leu Phe Phe Ile Ala Val Leu Gly His
        35   40   45
Thr Pro Glu Ala Val Gln Ile Ala Thr Gly Arg Asn Ala Ala Arg Leu
        50   55   60
Cys Cys Val Ala Ser Arg Asp Ala Gly Leu Ser Trp Gly Ser Ala Arg
65   70   75   80

3

```
Asp Leu Thr Glu Glu Ala Ile Gly Gly Ala Val Gln Asp Trp Ala Thr
              85                  90                  95
Phe Ala Val Gly Pro Gly His Gly Val Gln Leu Pro Ser Gly Arg Leu
             100             105             110
Leu Val Pro Ala Tyr Thr Tyr Arg Val Asp Arg Leu Glu Cys Phe Gly
             115             120             125
Lys Ile Cys Arg Thr Ser Pro His Ser Phe Ala Phe Tyr Ser Asp Asp
    130             135             140
His Gly Arg Thr Trp Arg Cys Gly Gly Leu Val Pro Asn Leu Arg Ser
145             150             155             160
Gly Glu Cys Gln Leu Ala Ala Val Asp Gly Gly Gln Ala Gly Ser Phe
             165             170             175
Leu Tyr Cys Asn Ala Arg Ser Pro Leu Gly Ser Arg Val Gln Ala Leu
             180             185             190
Ser Thr Asp Glu Gly Thr Ser Phe Leu Pro Ala Glu Arg Val Ala Ser
             195             200             205
Leu Pro Glu Thr Ala Trp Gly Cys Gln Gly Ser Ile Val Gly Phe Pro
    210             215             220
Ala Pro Ala Pro Asn Arg Pro Arg Asp Asp Ser Trp Ser Val Gly Pro
225             230             235             240
Arg Ser Pro Leu Gln Pro Pro Leu Leu Gly Pro Gly Val His Glu Pro
             245             250             255
Pro Glu Glu Ala Ala Val Asp Pro Arg Gly Gly Gln Val Pro Gly Gly
             260             265             270
Pro Phe Ser Arg Leu Gln Pro Arg Gly Asp Gly Pro Arg Gln Pro Gly
             275             280             285
Pro Arg Pro Gly Val Ser Gly Asp Val Gly Ser Trp Thr Leu Ala Leu
    290             295             300
Pro Met Pro Phe Ala Ala Pro Pro Gln Ser Pro Thr Trp Leu Leu Tyr
305             310             315             320
Ser His Pro Val Gly Arg Arg Ala Arg Leu His Met Gly Ile Arg Leu
             325             330             335
Ser Gln Ser Pro Leu Asp Pro Arg Ser Trp Thr Glu Pro Trp Val Ile
             340             345             350
Tyr Glu Gly Pro Ser Gly Tyr Ser Asp Leu Ala Ser Ile Gly Pro Ala
             355             360             365
Pro Glu Gly Gly Leu Val Phe Ala Cys Leu Tyr Glu Ser Gly Ala Arg
    370             375             380
Thr Ser Tyr Asp Glu Ile Ser Phe Cys Thr Phe Ser Leu Arg Glu Val
385             390             395             400
Leu Glu Asn Val Pro Ala Ser Pro Lys Pro Pro Asn Leu Gly Asp Lys
             405             410             415
Pro Arg Gly Cys Cys Trp Pro Ser
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<210> 10
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic construct

<400> 10
Gly Gly Gly Gly Ser
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<210> 11
<211> 2742
<212> DNA
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4

<400> 11
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ggcctggccg acgtcaccat cacgcaggtg aacgcgcccg cggacggcct ctactccgtc 180
ggcgatgtca tgaccttcaa catcaccctg accaacacca gcggcgaggc ccactcctac 240
gccccggcct cgacgaacct gtccgggaac gtctccaagt gccggtggcg caacgtcccg 300
gccgggacga ccaagaccga ctgcaccggc ctggccacgc acacggtgac cgccgaggac 360
ctcaaggccg gtggcttcac cccgcagatc gcctacgagg tcaaggccgt ggagtacgcc 420
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accgtcagct acacggtgcg cgtgcgctcg gtgtcggaca agacgatcaa cgtcgccgcc 600
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aagggcgccg tctacaactg caagccgctc acccacacga tcacgcaagc cgacgtcgac 720
gccggccgct ggacgccatc gatcaccctg acggccaccg gaaccgacgg cgccaccctc 780
cagacgctca ccgccaccgg caacccgatc aacgtcgtcg gcgaccaccc gcaggccacg 840
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cagggctggg gcggctcgcg cggcggcacc gacccggaga accggggcat catccaggcc 1260
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aacacgcgac gagccggtca tccggctctg agcactgact ga             2742
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<400> 12

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Met Thr Ser His Ser Pro Phe Ser Arg Arg Arg Leu Pro Ala Leu Leu
 1               5                   10                  15
Gly Ser Leu Pro Leu Ala Ala Thr Gly Leu Ile Ala Ala Ala Pro Pro
            20                  25                  30
Ala His Ala Val Pro Thr Ser Asp Gly Leu Ala Asp Val Thr Ile Thr
        35                  40                  45
Gln Val Asn Ala Pro Ala Asp Gly Leu Tyr Ser Val Gly Asp Val Met
    50                  55                  60
Thr Phe Asn Ile Thr Leu Thr Asn Thr Ser Gly Glu Ala His Ser Tyr
65                  70                  75                  80
Ala Pro Ala Ser Thr Asn Leu Ser Gly Asn Val Ser Lys Cys Arg Trp
            85                  90                  95
Arg Asn Val Pro Ala Gly Thr Thr Lys Thr Asp Cys Thr Gly Leu Ala
            100                 105                 110
Thr His Thr Val Thr Ala Glu Asp Leu Lys Ala Gly Gly Phe Thr Pro
        115                 120                 125
Gln Ile Ala Tyr Glu Val Lys Ala Val Glu Tyr Ala Gly Lys Ala Leu
    130                 135                 140
Ser Thr Pro Glu Thr Ile Lys Gly Ala Thr Ser Pro Val Lys Ala Asn
145                 150                 155                 160
Ser Leu Arg Val Glu Ser Ile Thr Pro Ser Ser Ser Gln Glu Asn Tyr
            165                 170                 175
Lys Leu Gly Asp Thr Val Ser Tyr Thr Val Arg Val Arg Ser Val Ser
            180                 185                 190
Asp Lys Thr Ile Asn Val Ala Ala Thr Glu Ser Ser Phe Asp Asp Leu
    195                 200                 205
Gly Arg Gln Cys His Trp Gly Gly Leu Lys Pro Gly Lys Gly Ala Val
    210                 215                 220
Tyr Asn Cys Lys Pro Leu Thr His Thr Ile Thr Gln Ala Asp Val Asp
225                 230                 235                 240
Ala Gly Arg Trp Thr Pro Ser Ile Thr Leu Thr Ala Thr Gly Thr Asp
            245                 250                 255
Gly Ala Thr Leu Gln Thr Leu Thr Ala Thr Gly Asn Pro Ile Asn Val
        260                 265                 270
Val Gly Asp His Pro Gln Ala Thr Pro Ala Pro Ala Pro Asp Ala Ser
    275                 280                 285
Thr Glu Leu Pro Ala Ser Met Ser Gln Ala Gln His Leu Ala Ala Asn
    290                 295                 300
Thr Ala Thr Asp Asn Tyr Arg Ile Pro Ala Ile Pro Pro Pro Pro Met
305                 310                 315                 320
Gly Thr Cys Ser Ser Pro Thr Thr Ser Ala Arg Arg Thr Thr Ala Thr
            325                 330                 335
Ala Ala Ala Thr Thr Pro Asn Pro Asn His Ile Val Gln Arg Arg Ser
            340                 345                 350
Thr Asp Gly Gly Lys Thr Trp Ser Ala Pro Thr Tyr Ile His Gln Gly
    355                 360                 365
Thr Glu Thr Gly Lys Lys Val Gly Tyr Ser Asp Pro Ser Tyr Val Val
    370                 375                 380
Asp His Gln Thr Gly Thr Ile Phe Asn Phe His Val Lys Ser Tyr Asp
385                 390                 395                 400
Gln Gly Trp Gly Gly Ser Arg Gly Gly Thr Asp Pro Glu Asn Arg Gly
            405                 410                 415
Ile Ile Gln Ala Glu Val Ser Thr Ser Thr Asp Asn Gly Trp Thr Trp
            420                 425                 430
Thr His Arg Thr Ile Thr Ala Asp Ile Thr Lys Asp Lys Pro Trp Thr
    435                 440                 445
Ala Arg Phe Ala Ala Ser Gly Gln Gly Ile Gln Ile Gln His Gly Pro
    450                 455                 460
His Ala Gly Arg Leu Val Gln Gln Tyr Thr Ile Arg Thr Ala Gly Gly
465                 470                 475                 480
Pro Val Gln Ala Val Ser Val Tyr Ser Asp Asp His Gly Lys Thr Trp
            485                 490                 495
```

6

```
Gln Ala Gly Thr Pro Ile Gly Thr Gly Met Asp Glu Asn Lys Val Val
            500                 505                 510
Glu Leu Ser Asp Gly Ser Leu Met Leu Asn Ser Arg Ala Ser Asp Gly
            515                 520                 525
Ser Gly Phe Arg Lys Val Ala His Ser Thr Asp Gly Gly Gln Thr Trp
            530                 535                 540
Ser Glu Pro Val Ser Asp Lys Asn Leu Pro Asp Ser Val Asp Asn Ala
545                 550                 555                 560
Gln Ile Ile Arg Ala Phe Pro Asn Ala Ala Pro Asp Asp Pro Arg Ala
                565                 570                 575
Lys Val Leu Leu Leu Ser His Ser Pro Asn Pro Arg Pro Trp Cys Arg
            580                 585                 590
Asp Arg Gly Thr Ile Ser Met Ser Cys Asp Asp Gly Ala Ser Trp Thr
            595                 600                 605
Thr Ser Lys Val Phe His Glu Pro Phe Val Gly Tyr Thr Thr Ile Ala
            610                 615                 620
Val Gln Ser Asp Gly Ser Ile Gly Leu Leu Ser Glu Asp Ala His Asn
625                 630                 635                 640
Gly Ala Asp Tyr Gly Gly Ile Trp Tyr Arg Asn Phe Thr Met Asn Trp
                645                 650                 655
Leu Gly Glu Gln Cys Gly Gln Lys Pro Ala Glu Pro Ser Pro Gly Arg
            660                 665                 670
Arg Arg Arg Arg His Pro Gln Arg His Arg Arg Arg Ser Arg Pro Arg
            675                 680                 685
Arg Pro Arg Arg Ala Leu Ser Pro Arg Arg His Arg His His Pro Pro
            690                 695                 700
Arg Pro Ser Arg Ala Leu Arg Pro Ser Arg Ala Gly Pro Gly Ala Gly
705                 710                 715                 720
Ala His Asp Arg Ser Glu His Gly Ala His Thr Gly Ser Cys Ala Gln
                725                 730                 735
Ser Ala Pro Glu Gln Thr Asp Gly Pro Thr Ala Ala Pro Ala Pro Glu
            740                 745                 750
Thr Ser Ser Ala Pro Ala Ala Glu Pro Thr Gln Ala Pro Thr Val Ala
            755                 760                 765
Pro Ser Val Glu Pro Thr Gln Ala Pro Gly Ala Gln Pro Ser Ser Ala
            770                 775                 780
Pro Lys Pro Gly Ala Thr Gly Arg Ala Pro Ser Val Val Asn Pro Lys
785                 790                 795                 800
Ala Thr Gly Ala Ala Thr Glu Pro Gly Thr Pro Ser Ser Ser Ala Ser
                805                 810                 815
Pro Ala Pro Ser Arg Asn Ala Ala Pro Thr Pro Lys Pro Gly Met Glu
                820                 825                 830
Pro Asp Glu Ile Asp Arg Pro Ser Asp Gly Thr Met Ala Gln Pro Thr
            835                 840                 845
Gly Ala Pro Ala Arg Arg Val Pro Arg Arg Arg Arg Arg Arg Arg Pro
            850                 855                 860
Ala Ala Gly Cys Leu Ala Arg Asp Gln Arg Ala Ala Asp Pro Gly Pro
865                 870                 875                 880
Cys Gly Cys Arg Gly Cys Arg Arg Val Pro Ala Ala Ala Gly Ser Pro
                885                 890                 895
Phe Glu Glu Leu Asn Thr Arg Arg Ala Gly His Pro Ala Leu Ser Thr
            900                 905                 910
Asp
```